

Claims

What is claimed is:

5 1. A composition comprising:

(A) non-branched polybutadiene having terminal hydroxyl functionality less than 2 per molecule by average; and

10 (B) branched polybutadiene having terminal hydroxyl functionality more than 2 per molecule by average;

the weight ratio of (A) to (B) being about 99:1 to 1:99.

2. The composition of claim 1 wherein the ratio of (A) to (B) is about 10:90 to 90:10.

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3. The composition of claim 1, wherein the non-branched polybutadiene (A) has terminal hydroxyl functionality of about 1.8-1.9 and the branched polybutadiene (B) has terminal functionality of about 2.4 to 2.6.

20 4. The reaction product of the composition of claim 1 with a monomer or polymer (C), the reaction product having one or more hydroxyl, isocyanate, carboxyl, phenol, epoxy, or amine terminal groups.

25 5. A curable composition comprising the reaction product of claim 4 and one or more chain extending agents.

6. The composition of claim 1 further comprising a polyfunctional monomer or polymer (C) having functionality which is reactive with the terminal hydroxyl groups of (A) and (B).

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7. The composition of claim 6 wherein the polyfunctional monomer or polymer (C) is selected from organic polyisocyanates, polyamides, polyamines, anhydrides of dicarboxylic acids, polyepoxides, and polyesters.

8. A prepolymer which is the reaction product of the composition of claim 1 with an organic polyisocyanate (C).

5 9. The prepolymer of claim 8 wherein the organic polyisocyanate (C) is selected from the group consisting of 4,4'-methylenebis(phenyl isocyanate), toluene diisocyanate, and hexane diisocyanate.

10 10. A curable composition comprising the prepolymer of claim 8 and a chain extending monomer.

11. The curable composition of claim 10 wherein the chain extending monomer is selected from the group consisting of diol and diamine.

15 12. A direct cured polyurethane composition comprising prepared by reacting the composition of claim 1 with a polyisocyanate.

20 13. Composition of claim 12 in a form selected from roof water-resistant membrane, insulated glass sealant, hot melt adhesive, geo-membrane, and liquid binder in brake system.

14. Method of preparing compositions of claim 1 comprising blending (A) and (B) in a ratio of 99:1 to 1:99 by weight.

25 15. Method of preparing prepolymers comprising reacting a composition according to claim 1 with organic polyisocyanate, phenol, amine, dianhydride, or peracid.

16. Method of preparing cured thermoplastic resins comprising reacting a prepolymer prepared according to claim 15 with a polyfunctional monomer.

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17. Method of preparing a roof water-resistant membrane, insulated glass sealant, hot melt adhesive, geo-membrane, or liquid binder for a brake system comprising reacting a prepolymer prepared according to claim 15 with a polyfunctional crosslinking monomer.